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10/591,632	09/05/2006	Martyn Vincent Twigg	AA 1692 US / MALF	3293

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EXAMINER	
TAKEUCHI, YOSHITOSHI	
ART UNIT	PAPER NUMBER
1726	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/591,632	TWIGG, MARTYN VINCENT	
	Examiner	Art Unit	
	YOSHITOSHI TAKEUCHI	1726	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 August 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-8,10,15,16,18 and 21-27* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-8,10,15,16,18 and 21-27* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *05 September 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-8, 10, 15-16, 18, and 21-27 are presented for examination, wherein claims 18, 21, 26, and 27 are currently amended. Claims 9, 11-14, 17, and 19-20 are cancelled.

2. The 35 U.S.C. § 102(b) rejection of claims 18 and 26-27 is withdrawn as a result of the amendment of said claims.

3. The 35 U.S.C. §§ 102(b) and 103(a) rejections of claims 1-6, 10, 15-16, 22, and 25 are withdrawn as a result of the applicants' arguments. However, the references are re-applied as provided *infra*. Furthermore, the 35 U.S.C. § 103(a) rejection of claim 24 is withdrawn as a result of the applicants' argument.

4. As a result of the new grounds of rejection, as provided *infra*, this is a ***third non-final action***.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

6. Claims 18, 21, and 26-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Newly amended claims 18, 21, and 26-27 change the statutory subject matter from an "[a]pparatus" to a "system." However, said system may be either a method or a kit. For purposes of examination, the examiner treats the "system" to be a kit.

Means Plus Function – 35 USC § 112 sixth paragraph

7. Regarding claim **18**, applicant claims "means for sealingly isolating," "means for reducing pressure," and "means for dosing."

A claim limitation will be presumed to invoke 35 U.S.C. § 112, sixth paragraph, if it meets the following 3-prong analysis: (A) the claim limitations uses the phrase "means for" or "step for;" (B) the "means for" or "step for" is modified by functional language; and (C) the phrase "means for" or "step for" is not modified by sufficient structure, material, or acts for achieving the specified function. See MPEP § 2181(I).

To properly invoke 35 U.S.C. § 112 sixth paragraph, the specification must provide an adequate disclosure showing what is meant by that language in a way that one skilled in the art will understand what structure (or material or acts) will perform the recited function. See MPEP § 2181(II).

Claim Language	Structural Supporting Language	Citation to Specification
Means for sealingly isolating	"Sealable closure 130 can comprise interlocking members (not shown) on first end 150 and second end 240 of the contained and an optionally expandable o-ring or gasket made from a rubber such as a synthetic rubber polymer."	p.11
Means for reducing pressure	"A first end 150 of the container 120 is connected to a vacuum pump 16 via pressurisible line 180."	p.10
Means for dosing	"Valve 300 and pump 310, each also 25 controlled by CPU 220, in combination provide a means for dosing the isolated and evacuated channels with a pre-determined quantity of the liquid."	p.10

Claim 18 properly invokes 35 U.S.C. § 112 sixth paragraph.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

METHOD

4. Claims 1-8, 10, 15-16, 22, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brisley et al (WO01/12320) and ***in the alternative*** in view of Hoyer et al (GB 1,515,733).

a. Regarding claim **1**, Brisley teaches a method of manufacturing a catalyzed ceramic wall-flow filter comprising a plurality of channels (1:4-5, 13-20, and 7:10-20), which method comprising the steps of: (a) reducing the pressure in a pore structure of the channel walls relative to the surrounding atmospheric pressure to provide evacuated channel walls (7:18), and (b) contacting a surface of the channel walls with a liquid containing at least one catalyst component or a precursor thereof, wherein the liquid permeates the pore structure of the channel walls (7:16-18, wherein it would be expected that the "the liquid permeates the pore structure of the channel walls" due to the vacuum) and the plurality of channels in the wall-flow filter are plugged at an inlet end or an outlet end of the wall-flow filter (7:14-16).

Brisley broadly teaches the "filter of the present invention can be made by methods known in the art" (7:1), but does not expressly teach the liquid permeates channels walls that are already evacuated. However, it teaches "dosing a pre-determined quantity of a liquid being a…solution of a catalyst…into the containment means; and then by applying…a vacuum, drawing said liquid component into at least a portion of the open wall-flow monolith channels" (7:16-19, emphasis added). As claimed the smallest amount of vacuum suffices, so it would be expected due to differences in inertia that the gas in the pore structure would evacuate more quickly than the liquid would be drawn

into the channels. As a result, it would momentarily be expected that at least a portion of the wall-flow filter channels would be evacuated, reading on "wherein reducing the pressure in the pore structure of the wall-flow filter occurs prior to contacting the surface of the evacuated channel walls with the liquid," and subsequently be contacted with the liquid.

In the alternative, Hoyer teaches a method of manufacturing a catalyzed ceramic filter with a plurality of channels (1:38-41 and 57), the method including the step of "subjecting the member to vacuum treating just prior to its being contacted by the coating material, whereby there can be a rapid, improved coating placed on the member" (2:84-91). Further, Hoyer teaches "it does appear that a greater quantity of coating material can be placed on a support member following a vacuum, degassing operation, in comparison to dipping operation. It is also believed that there may be better or more complete filling of pores so a to hold a greater quantity of coating material as well as perhaps obtain a better binding or "locking" of the coating material onto the surface of the element" (4:9-16).

Brisley teaches the "zones supporting the catalyst are rendered gas-impermeable by applying materials to them" (4:20-21). Since Hoyer teaches vacuum treating prior to contact with the coating material provides a better or more complete filling of pores so a to hold a greater quantity of coating material, it would have been obvious to a person of ordinary skill at the time of the invention to subject the member of Brisley to vacuum treating just prior to its being contacted by the coating material, in at least the zone

supporting the catalysts in the wall-flow filter of in order to provide a better or more complete filling of pores in the zones supporting the catalyst, as taught by Hoyer.

a. Regarding claim **25**, Brisley and *in the alternative* Brisley as modified teaches the method of claim 1, wherein Brisley further teaches the steps of: (c) drying the filter containing the catalyst component or its precursor (e.g. 10:25), and (d) calcining the filter containing the catalyst component or its precursor (e.g. 10:26).

b. Regarding claim **2**, Brisley and *in the alternative* Brisley as modified teaches the method of claim 25, but does not expressly teach "steps (b) and (c) are repeated at least once prior to step (d)." However, a person of ordinary skill in the art would have appreciated the steps (b) and (c) in light of the example provided, which teaches dipping (instead of vacuum impregnation) in a solution of platinum chloride then drying (10:18, steps (b)-(c)), followed by several other steps, then a final dipping in a Pt/Rh solution then drying (10:24-25, repeating steps (b)-(c)), then calcining (10:26, step (d)).

In the alternative, it would have been obvious to a person of ordinary skill in the art at the time of the invention to repeat steps (b) and (c) prior to step (d) in order to ensure sufficient filling of the pores in the zones supporting the catalysts, since Brisley teaches the porous zones are to be rendered gas impermeable.

c. Regarding claim **3**, Brisley and *in the alternative* Brisley as modified teaches the method of claim 1, wherein Brisley teaches "by applying…a vacuum, drawing said liquid component into at least a portion of the open wall-flow monolith channels" (7:18-20, reading on "the pressure reduction in the pore structure of the channel walls is maintained

during the liquid contacting step" since the vacuum is the driving force of drawing said liquid into at least a portion of the channels).

d. Regarding claim **4**, Brisley and *in the alternative* Brisley as modified teaches the method of claim 1, wherein Brisley teaches the liquid contains the precursor and comprises an aqueous solution of at least one metal salt (e.g. 10:9-10, aqueous platinum chloride).

e. Regarding claim **5**, Brisley and *in the alternative* Brisley as modified teaches the method of claim 1, wherein Brisley teaches the liquid containing at least one catalyst component comprises a slurry of at least one particulate metal oxide material in a carrier medium (7:17, slurry; 5:13-19, metal oxide NOx absorber; 5:33-6:1, wherein the catalyst and NOx absorber may be co-precipitated, i.e. deposited from the same slurry).

f. Regarding claim **6**, Brisley and *in the alternative* Brisley as modified teaches the method of claim 1, wherein Brisley teaches a NOx absorber particle may be metal oxide materials (5:13-14) with diameters of e.g. 1-500 μm (6:2-3, overlapping the instantly claimed "D50 in the range 1-20 μm").

g. Regarding claim **22**, Brisley and *in the alternative* Brisley as modified teaches the method of claim 5, wherein Brisley teaches the carrier medium comprises water (e.g. 10:9 and 5:33-6:1, wherein the catalyst and NOx absorber may be co-precipitated, i.e. deposited from the same slurry).

h. Regarding claims **7-8**, Brisley and *in the alternative* Brisley as modified teaches the method of claim 1, wherein Brisley teaches the liquid containing the at least one catalyst component comprises a dispersion of at least one metal oxide material in a carrier

medium (7:4 and 5:33-6:1, wherein the catalyst and NOx absorber, metal oxide, may be co-precipitated, i.e. deposited from the same sol). Brisley does not expressly teach the dispersion being a sol. However, a sol is merely a type of dispersion wherein fine particles are suspended in solution. It would be expected that the dispersion is a sol, since the particle size of claim 8 is obvious for the following reason.

Brisley teaches a preferred embodiment wherein the mean pore size is 1-50 μm, where the sol particles (7:4, catalyst or NOx absorber) are for example 1-500 μm, and further teaches that the zones in the columns are rendered gas-impermeable by applying materials to them (4:20-21), suggesting that the particle size of the catalysts and metal oxides are dependent on the size of the pores, which in turn are dependent on the pressure and fluid being filtered (4:13-16). As a result, it would have been obvious to a person of ordinary skill at the time of the invention to optimize the size of the catalysts or metal oxide particles within the claimed range since said particles are dependent on the size of the pores, which in turn are dependent on the type of fluid being filtered (gas or liquid) and the pressure during filtration. MPEP § 2144.05(II).

i. Regarding claim **23**, Brisley and *in the alternative* Brisley as modified teaches the method of claim 7, wherein Brisley teaches the carrier medium comprises water (e.g. 10:9 and 5:33-6:1).

j. Regarding claim **10**, Brisley and *in the alternative* Brisley as modified teaches the method of claim 1, wherein Brisley teaches an example wherein a catalyst precursor, platinum chloride, is loaded in the catalyzed ceramic wall-flow filter in an amount of 2 wt% (10:9-10, overlapping the instantly claimed range of "from 20-120 g/liter" at 20

g/liter), so it would be expected that a catalyst component, such as platinum, would also be loaded in a concentration within the claimed range, since the catalyst and catalyst precursor are equivalent compositions of the slurry/sol, as taught by Brisley (7:17). MPEP § 2144.06(I).

k. Regarding claim **15**, Brisley and *in the alternative* Brisley as modified teaches the method of claim 1, wherein Brisley teaches the ceramic filter is made from a material selected from the group consisting of silicon carbide, alumina, cordierite, and mullite (4:25-26).

l. Regarding claim **16**, Brisley and *in the alternative* Brisley as modified teaches the method of claim 1, wherein Brisley teaches the gas must pass through the channel wall in order to pass through the outlet (e.g. Figure 1), so the porosity and pore size of the filter are a result effective variable, determining the amount of air that may pass through the filter. So it would have been obvious to optimize the porosity within the claimed range of "40-60%, prior to use." MPEP § 2144.05(II).

10. Claim 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brisley et al (WO01/12320) in view of Hoyer et al (GB 1,515,733), as provided *supra*, and further in view of Ogawa et al (US 5,733,352).

Regarding claim **24**, Brisley and *in the alternative* Brisley as modified teaches the method of claim 15, as provided *supra*, wherein Brisley teaches the filter may be made from a metal or a ceramic, wherein the ceramic may selected from the group consisting of silicon carbide, alumina, cordierite, and mullite (4:25-26), but does not expressly teach "the ceramic

filter is made is the thermet, wherein the thermet is selected from the group consisting of Al_2O_3/Fe, Al_2O_3/Ni and B_4C/Fe."

Ogawa teaches a honeycomb structure for use as a diesel engine particulate filter (1:6-7), wherein the structure can be made of materials such as metals; ceramics, such as silicon carbide, alumina, cordierite, or mullite; or, a thermet, such as Al_2O_3/Fe, Al_2O_3/Ni and B_4C/Fe (4:27-30). As a result, a thermet such as Al_2O_3/Fe, Al_2O_3/Ni and B_4C/Fe, is a functional equivalent of the silicon carbide, alumina, cordierite, and mullite in diesel engine filters and may be substituted for one another. See MPEP § 2144.06(II).

APPARATUS

8. Claims 18, 21, and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimrock (US 4,550,034) in view of Brisley et al (WO01/12320), with evidence from Aderhold (WO 99/47260, with citation to US 6,599,570), and Heck et al (Ronald Heck & Robert Farrauto, Catalytic Air Pollution Control Commercial Technology, 216-220 John Wiley & Sons (2002), as provided in an IDS.

a. Regarding claim **18**, Shimrock teaches a system comprising (a) a filter and (b) an apparatus capable of dispensing at least one catalyst component in a ceramic monolith or honeycomb with a multiplicity of longitudinal passageways in each unit (Figure 1 and 1:20-24) comprising a seal (Figure 1, item 20, "means for sealingly isolating the plurality of channels of the filter from the surrounding atmosphere"); a vacuum pump (4:11-12 and Figure 1, item 23, "means for reducing pressure in the isolated channels to below the surrounding atmospheric pressure thereby to establish a vacuum in the pore structure of

the filter walls to provide isolated and evacuated channels"); a pan (Figure 1, item 10, "at least one reservoir" capable of "holding a liquid containing the at least one catalyst component or a precursor thereof"); and a valve (Figure 1, item 13 and 4:40-43, controlling the amount of coating slurry being pumped).

Shimrock teaches a filter with a ceramic honeycomb monolith with a multiplicity of longitudinal passageways in each unit (1:20-24), but does not expressly teach the filter being a "wall flow-through filter having filter walls, wherein said filter walls…have a pore structure, the plurality of channels in the wall-flow filter are plugged at an inlet end or an outlet end of the wall-flow filter." However, Brisley teaches a catalyzed ceramic wall-flow filter having filter walls, wherein said filter walls…have a pore structure, the plurality of channels in the wall-flow filter are plugged at an inlet end or an outlet end of the wall-flow filter (2:22-27 and 4-24-25), wherein the filter can be made by a variety of methods and preferably made by the apparatus taught in WO 99/47260 (7:10-11, wherein WO 99/47260 hereinafter is referred to As "Aderhold"). Aderhold teaches an apparatus for making flow-through filters, but not expressly wall-flow filters (1:31-33), so Brisley with evidence from Aderhold suggests that apparatus used to make flow-through filters may also be used to make wall flow filters.

Heck teaches the ceramic wall flow filter is "an innovation extension of extruded honeycomb catalyst support" (p.216, emphasis added). As a result, it would have been obvious to a person of ordinary skill at the time of the invention to use the system of Shimrock as modified to make a wall flow through filter, since Heck teaches the wall

flow filter is an innovation over traditional flow-though honeycomb filters so are more desirable in the marketplace than flow-through filters.

b. Regarding claim **21**, Shimrock as modified teaches the system of claim 18, but does not expressly teach "the apparatus is at least semi-automated to control both the means for reducing pressure in the isolated channels and the means for dosing the liquid." However, it is within the level of ordinary engineering skill to automate a process. MPEP 2144.04(III).

b. Regarding claim **26**, Shimrock teaches system comprising (a) a filter and (b) an apparatus capable of dispersing at least one catalyst component in the channels of the filter walls comprising a pressurizable container having a sealable closure (Figure 1, items 15 and 20 for receiving a filter); a vacuum pump (4:11-12 and Figure 1, item 23, capable of "reduc[ing] pressure in the isolated channels to below the surrounding atmospheric pressure thereby to establish a vacuum in the pore structure of the filter walls to provide isolated and evacuated channels"); a pan (Figure 1, item 10, "at least one reservoir" capable of "holding a liquid containing at least one catalyst component or a precursor thereof"); and a pump (4:40-43, capable of "dosing the isolated and evacuated channels with a pre-determined quantity of the liquid").

Shimrock teaches a filter with a ceramic honeycomb monolith with a multiplicity of longitudinal passageways in each unit (1:20-24), but does not expressly teach the filter being a "wall flow-through filter having filter walls, wherein said filter walls…have a pore structure, the plurality of channels in the wall-flow filter are plugged at an inlet end or an outlet end of the wall-flow filter." However, Brisley teaches a catalyzed ceramic

wall-flow filter having filter walls, wherein said filter walls…have a pore structure, the plurality of channels in the wall-flow filter are plugged at an inlet end or an outlet end of the wall-flow filter (2:22-27 and 4-24-25), wherein the filter can be made by a variety of methods and preferably made by the apparatus taught in WO 99/47260 (7:10-11, wherein WO 99/47260 hereinafter is referred to As "Aderhold"). Aderhold teaches an apparatus for making flow-through filters, but not expressly wall-flow filters (1:31-33), so Brisley with evidence from Aderhold suggests that apparatus used to make flow-through filters may also be used to make wall flow filters.

Heck teaches the ceramic wall flow filter is "an innovation extension of extruded honeycomb catalyst support" (p.216, emphasis added). As a result, it would have been obvious to a person of ordinary skill at the time of the invention to use the system of Shimrock as modified to make a wall flow through filter, since Heck teaches the wall flow filter is an innovation over traditional flow-though honeycomb filters so are more desirable in the marketplace than flow-through filters.

c. Regarding claim **27**, Shimrock teaches the system of claim 26, wherein the limitation "the vacuum pump maintains the reduced pressure in the isolated channels to below the surrounding atmospheric pressure during dosing of the liquid" does not provide further structural limitations to further limit the apparatus claim. See MPEP § 2114.

9. Claims 18, 21, and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brisley et al (WO01/12320) in view of Aderhold (WO 99/47260, with citation to US 6,599,570).

d. Regarding claim **18**, Brisley teaches a system (7:10-13) comprising (a) a catalyzed ceramic wall-flow filter having filter walls, wherein said filter walls define a

plurality of channels and have a pore structure, the plurality of channels in the wall-flow filter are plugged at an inlet end or an outlet end of the wall-flow filter (2:22-27 and 4-24-25) and Brisley expressly teaches (b) the filter is preferably made by the apparatus of Aderhold (7:10-11, WO 99/47260), wherein Aderhold teaches an apparatus (title) capable of "dispersing at least one catalyst component in the channels of the filter walls" (3:2-3) comprising (i) means for sealingly isolating the plurality of channels of the ceramic wall-flow filter from the surrounding atmosphere (3:62-4:8), (ii) vacuum (e.g. 4:66 and 5:39-40, Figure 1 item 8 is connected to a source of a vacuum, meeting "means for reducing pressure in the isolated channels to below the surrounding atmospheric pressure thereby to establish a vacuum in the pore structure of the filter walls to provide isolated and evacuated channels"), (iii) containment means (Figure 1, item 2, meeting "at least one reservoir" capable of "holding a liquid containing the at least one catalyst component or a precursor thereof") and in the alternative would be expected since the liquid used to coat the monolithic support must be sourced from a containment vessel (3:1-8), and, (iv) means for dosing the isolated and evacuated channels with a pre-determined quantity of the liquid (4:18-20 and 5:6).

e. Regarding claim **21**, Brisley as modified teaches the system of claim 18, but does not expressly teach "the apparatus is at least semi-automated to control both the means for reducing pressure in the isolated channels and the means for dosing the liquid." However, it is within the level of ordinary engineering skill to automate a process. MPEP 2144.04(III).

10. Claims 18, 21, and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brisley et al (WO01/12320) in view of Aderhold (WO 99/47260, with citation to US 6,599,570), and Shimrock (US 4,550,034)

f. Regarding claim **26**, Brisley teaches a system (7:10-13) comprising (a) a catalyzed ceramic wall-flow filter having filter walls, wherein said filter walls define a plurality of channels and have a pore structure, the plurality of channels in the wall-flow filter are plugged at an inlet end or an outlet end of the wall-flow filter (2:22-27 and 4-24-25) and Brisley expressly teaches (b) the filter is preferably made by the apparatus of Aderhold (7:10-11, WO 99/47260), wherein Aderhold teaches an apparatus (title) capable of "dispersing at least one catalyst component in the channels of the filter walls" (3:2-3) comprising (i) a pressurizable container having a sealable closure for receiving the ceramic wall-flow filter (3:62-4:8), (ii) vacuum (e.g. 4:66 and 5:39-40, Figure 1 item 8 is connected to a source of a vacuum, meeting "means for reducing pressure in the isolated channels to below the surrounding atmospheric pressure thereby to establish a vacuum in the pore structure of the filter walls to provide isolated and evacuated channels"), (iii) containment means (Figure 1, item 2, meeting "at least one reservoir" capable of "holding a liquid containing the at least one catalyst component or a precursor thereof") and in the alternative would be expected since the liquid used to coat the monolithic support must be sourced from a containment vessel (3:1-8), and, (iv) means for dosing the isolated and evacuated channels with a pre-determined quantity of the liquid (4:18-20 and 5:6).

Brisley as modified does not expressly teach the vacuum is formed by a vacuum pump or that the dosing is by a pump. However, Shimrock teaches an apparatus for dispersing at least one catalyst component in the channels of the filter walls comprising a pressurizable container having a sealable closure (Figure 1, items 15 and 20 for receiving the ceramic wall-flow filter); a vacuum pump (4:11-12 and Figure 1, item 23, to reduce pressure in the isolated channels to below the surrounding atmospheric pressure thereby to establish a vacuum in the pore structure of the filter walls to provide isolated and evacuated channels); a pan (Figure 1, item 10, at least one reservoir for holding a liquid containing at least one catalyst component or a precursor thereof); and a pump (4:40-43, for dosing the isolated and evacuated channels with a pre-determined quantity of the liquid).

Shimrock teaches a precisely controlled, predetermined amount of slurry is metered to the filter monolith (2:66-67), which is by a pump 4:40-41). As a result, it would have been obvious to a person of ordinary skill at the time of the invention to use the pump of Shimrock in the system of Brisley as modified in order to meter in a precisely controlled, predetermined amount of slurry, which reduces waste.

Furthermore, Shimrock teaches a vacuum may be applied by a pump (4:11-12), wherein the vacuum is applied until after the slurry is removed, after which the vacuum is broken. As a result, it would have been obvious to a person of ordinary skill at the time of the invention to use a pump, as taught by Shimrock, as the pump means in the system of Brisley as modified, since the vacuum may be easily broken by stopping a vacuum pump.

g. Regarding claim **27**, Brisley as modified teaches the apparatus of claim 26, wherein the limitation "the vacuum pump maintains the reduced pressure in the isolated channels to below the surrounding atmospheric pressure during dosing of the liquid" does not provide further structural limitations to further limit the apparatus claim. See MPEP § 2114.

Response to Arguments

5. Applicant's arguments with respect to claims 1-8, 10, 15-16, 18, and 21-27 have been considered but are moot in view of the new ground(s) of rejection.

6. Regarding the prior 35 U.S.C. § 103(a) rejection of claims over Brisley in view of Hoyer, the applicants allege the proposed amendment would render Brisley unsatisfactory for its intended purpose since "an insufficient amount would be remaining on the surface to convert NO to NO2 for later use in combusting the soot" (Response p.8 ¶4).

In response, the examiner refers *supra*, regarding the amended rejection. Specifically, the examiner notes that the claims as claimed are obvious in view of Brisley alone. Furthermore, the examiner notes that the argument is not supported by evidence. Arguments of counsel are insufficient substitute for objective evidence.

Finally, as provided *supra*, Hoyer is now applied only for the teaching that applying the vacuum prior to contact with the coating solution provides for a more thorough coating of catalyst particles in the pores within the zone associated with the catalyst particles.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to YOSHITOSHI TAKEUCHI whose telephone number is (571)270-5828. The examiner can normally be reached on Monday-Thursday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/YOSHITOSHI TAKEUCHI/
Examiner, Art Unit 1726

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